

**Department of Defense Instruction**

USDR&amp;E

**SUBJECT:** DoD Science and Engineering Apprenticeship Program for High School Students

**References:**

- (a) DoD Directive 3201.1, "Management of DoD Research and Development Laboratories," March 9, 1981
- (b) DoD Instruction 3201.3, "DoD Research and Development Laboratories," March 31, 1981
- (c) Federal Personnel Manual (FPM), Chapter 213, Schedule A, 213.3102 (q), 213.3102 (v), 213.3102 (w)

**A. PURPOSE**

This Instruction establishes the DoD Science and Engineering Apprenticeship Program for High School Students and provides policies and procedures for its use in DoD in-house laboratories and organizations performing contract research for the laboratories.

**B. APPLICABILITY AND SCOPE**

The provisions of this Instruction apply to the Office of the Secretary of Defense, the Military Departments, the Defense Advanced Research Projects Agency, and the Defense Nuclear Agency (hereafter called "DoD Components").

**C. DEFINITIONS**

1. Science and Engineering Apprentice (hereafter referred to as apprentice). A high school student who is considered to have the potential to succeed in science and engineering pursuits and is employed under the provisions of this Instruction.

2. Mentor. An employee of an in-house laboratory who is designated to supervise, instruct, and counsel the apprentice.

**D. OBJECTIVES**

It is the objective of the Department of Defense to encourage and support careers in science and technology, since the defense effort and readiness are based upon sound technological developments. This objective is intended to:

- 1. Stimulate among high school students broader interest in careers in science and engineering.
- 2. Establish individual working relationships between students and active researchers.
- 3. Strengthen the nation's efforts to recruit and sustain careers in science and engineering, consistent with affirmative action program goals and objectives.

**93-22725**

**Best  
Available  
Copy**

E. RESPONSIBILITIES

1. Heads of DoD Components shall:

a. Follow the program features outlined in enclosure 1 consistent with the procedures and objectives contained in this Instruction.

b. Issue a statement and plan outlining specifically how the program will operate within the Component.

c. Identify a point of contact within the Component's research, development, test, and evaluation function to work with the Deputy Under Secretary of Defense for Research and Engineering (Research and Advanced Technology) in promoting this program.

d. Use government-owned and operated laboratory and research and development facilities to provide apprentices with a sound learning environment and a mentor relationship.

2. The Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics) has responsibility for and shall be consulted with respect to:

a. Oversight of civilian employment policies and requirements that apply to science and engineering apprentices. Conditions concerning dependents of DoD personnel that apply to various appointing authorities apply to this program.

b. Ensuring compliance with affirmative action program goals and objectives.

3. The Deputy Under Secretary of Defense for Research and Engineering (Research and Advanced Technology) shall:

a. Provide overall program leadership for the Department of Defense.

b. Issue annual goals and objectives for the number of apprentices to be employed.

c. Report to the Under Secretary of Defense for Research and Engineering on program progress and significant results achieved.

d. Ensure the proper coordination of this program with similar programs in the public and private sectors.

F. EFFECTIVE DATE AND IMPLEMENTATION

This Instruction is effective immediately. Forward one copy of implementing documents to the Under Secretary of Defense for Research and Engineering within 120 days.



R. D. DeLauer

Under Secretary of Defense  
for Research and Engineering

Enclosure - 1  
Program Features

3218.1 (Encl 1)  
Jul 29, 81

PROGRAM FEATURES: DEPARTMENT OF DEFENSE  
SCIENCE AND ENGINEERING APPRENTICESHIP PROGRAM FOR  
HIGH SCHOOL STUDENTS

Each DoD Component will insure that the following features are incorporated into its individual operating Science and Engineering High School Apprenticeship programs. These features are consistent with and supportive of the intent of the program to encourage young people to pursue careers in science and engineering by enabling them to have exposure to research and laboratory practices under the guidance of an experienced scientist or researcher who serves as the youth's mentor. Execution of the program, including the recruiting of apprentices and mentors, is delegated to the individual laboratories and to the scientific officers responsible for the Army, Navy, and Air Force contract research program.

A. The following features should be incorporated into each program:

1. Work assigned to apprentices shall be considered meaningful to both the apprentice and the sponsoring organization, shall be tailored to the interests and capabilities of the apprentice, and shall provide a personally rewarding learning experience for the apprentice. Assignments are intended to be instructive and developmental, while concurrently involving the apprentice fully in a meaningful project useful to the laboratory or research organization. Assignments in which apprentices "look over the shoulders of people who are doing real work," or assignments which are "make-work," are inappropriate.
2. A mentor will be assigned to each apprentice to provide project supervision and on-the-job instruction, to encourage learning and development, to provide information about careers and academic programs related to science and engineering, or, as appropriate, to refer the apprentice to others who can supplement the mentor's ability to provide career counseling and guidance.
3. Promising candidates are normally identified and referred by local high school teachers and other officials. Criteria for eligibility shall be established by local high schools, local authorities, and DoD Component officials and mentors.
4. A variety of Civil Service appointment authorities can be used to hire high school apprentices in DoD laboratories, both during the summer as well as throughout the school year.
  - a. The authority providing the widest hiring latitude is Schedule A, 213.3102 (q), contained in the Federal Personnel Manual (FPM), Chapter 213 (reference (c)). This authority permits young people to work up to 1,040 hours a year throughout their high school and college years as long as the work assignment is related to their academic study. Such flexibility enables DoD laboratories to retain apprentices for several years, thereby increasing the apprentice's worth to the laboratory and research community, as well as reinforcing the positive scientific experiences the apprentice may have gained during his or her first summer. Additional guidance for appointment of cooperative education students who are in high school, only, is provided in FPM Chapter 308, Subchapter 5.

*per  
bark 50*

A-1

b. The Stay-in-School or Federal Summer Aid Program authorities, Schedule A, 213.3102 (v) or Schedule A, 213.3102 (w), FPM Chapter 213, (reference (c)), may also be used to appoint apprentices. For the apprentice program only, the Department of Defense has received a special waiver from the Office of Personnel Management (OPM) for the economic need criteria and the requirement to limit recruitment contacts to State Employment Service Offices. Work hours under the Stay-in-School authority may not exceed 20 hours per week. Stay-in-School appointees may be converted to the Summer Aid authority during summer vacation periods, and their work periods may be extended to full-time.

c. Pay rates for employment with in-house DoD laboratories shall be based on the level of work performed and the requirements of the particular appointment authority used. Apprentices may also be assigned as volunteers without pay under the provisions of the Civil Service Reform Act. Such assignments are particularly appropriate for those just starting high school, or those whose education is limited and who can perform little, if any, productive work. Acceptance of student volunteer service without pay must be documented as provided for in the Federal Personnel Manual, Chapter 308, Subchapter 7.

d. OPM has relaxed the minimum age limit for this program to allow employment of high school freshman and sophomores aged 14 and 15. Consequently, high school apprenticeships may begin during the first year of high school and extend through the summer after the apprentice has graduated from high school consistent with the appointment authority used. Apprentices may continue to be employed throughout their college years by using Schedule A, 213.3102 (q) as cited in subsection A.4., this enclosure.

e. Total time worked under any combination of appointment authorities may not exceed 1,040 hours in any 12-month period.

5. DoD Components are encouraged to facilitate the involvement of apprentices in other related activities, such as scientific and engineering fairs, meetings, and exhibitions, which would provide them with learning opportunities beyond their specific work assignments, and give them broader exposure to scientific and engineering fields. As cooperative relationships develop between local high schools and DoD Components, mentors and others involved with the program may wish to accept invitations from local school officials to address science classes, career days, and participate in other activities which can present opportunities for encouraging young people to enter scientific and engineering careers.

6. Various national public and private organizations have been established in recent years to provide technical assistance, training, materials, and guidance for educators and experiential learning coordinators in the techniques of designing and implementing experiential learning programs similar to the DoD Science and Engineering Apprenticeship Program for High School Students. Mentors and other program officials are encouraged to seek out the resources of these organizations to strengthen and improve local apprenticeship efforts.

7. Mentors and other DoD officials are further encouraged to refer promising graduates of the High School Apprenticeship Program to other DoD laboratories located in those communities in which the student intends to

attend college. DoD laboratories and other components are encouraged to retain these students throughout their college years, and may use the flexibility inherent in Schedule A, 213.3102 (q) to do so. Appointments within Schedule A, 213.3102 (q) authority may range from GS-01 through GS-07, permitting growth and development throughout the youth's high school and undergraduate years.

8. Organizations performing research under contract to the Department of Defense should be encouraged to develop comparable voluntary programs to involve high school apprentices in the scientific and engineering work of the organization.